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AUTHOR Haag, Pamela
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ABSTRACT

Although research on the effects of K-12 single-sex education is inconclusive in general, some common themes emerge in the research literature. This Digest reviews that research with particular attention to effects on girls' attitudes and achievement. The Digest first discusses attitudinal variables (i.e., self-esteem and attitudes toward academic subjects) and then explores research on achievement variables. The Digest concludes with a summary of research findings, including the following: (1) studies of attitudinal variables yielded some consistent findings, including differences in specific domains of self-concept between girls in single- and mixed-sex schools, and findings that support the view that single-sex contexts foster less stereotypical views of subjects; (2) studies finding positive achievement effects attributable to school type tend to view their findings as specific to certain contexts and group characteristics (including socioeconomic status); (3) some studies recognize that some single-sex schools are "doing something different" that may be reproducible in the coeducational context--these studies view policy and training interventions as particularly valuable; and (4) other studies have not claimed positive achievement effects for single-sex programs. The research, while inconsistent in its assessments of whether single-sex education is "better" than coeducation for girls, does reveal areas of consensus on specific indicators, which may serve as starting points for further research into how single-sex schools affect educational outcomes. (Contains 12 references.) (LPP)

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ERIC Clearinghouse on Elementary and Early Childhood Education

University of Illinois • 51 Gerty Drive • Champaign, IL 61820-7469
(217) 333-1386 • (800) 583-4135 (voice/TTY) • ericeece@uiuc.edu • http://ericeece.org

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K–12 Single-Sex Education: What Does the Research Say?

Pamela Haag

Interest in single-sex education has been reinvigorated by the educational reform movement and by skepticism about whether the coeducational environment fosters equitable treatment of boys and girls. However, the "for" or "against" stance that shapes popular literature on single-sex education is misleading because assessments of single-sex education's success or failure are contingent on (1) stakeholders' goals; (2) indicators of success used; (3) historical context; and (4) issues of selection bias, especially in the United States, where single-sex schools are overwhelmingly private. Although research on the effects of K-12 single-sex education is inconclusive in general, some common themes emerge in the research literature. This Digest reviews that research with particular attention to effects on girls' attitudes and achievement.

Attitudinal Variables

Self-esteem. Studies of the effect of school type on girls' self-esteem suggest that the sources of self-esteem for girls may differ in single-sex and coeducational schools. Studies that have found higher self-esteem for girls in the single-sex, as compared with the mixed-sex, environment have typically used multidimensional measures composed of subcategories such as academic, athletic, and social esteem. These studies' findings suggest that levels of girls' esteem in these individual subcategories—but not their general self-concept or global self-esteem—may differ between single-sex and mixed-sex environments.

For example, Cairns (1990) investigated self-esteem and locus of control (an individual's sense of how environment hinders or facilitates her or his goals) for students in secondary schools in Northern Ireland. He used a multidimensional measure of "self-esteem" made up of four subcategories—social, cognitive, athletic, and general—and concluded that single-sex schools are associated with benefits in self-esteem and locus of control, cautioning that his findings of higher esteem may be confined to cognitive self-concept. In another study from Northern Ireland, Granleese and Joseph (1993) deployed a domain-specific self-concept measure in their study of girls from one single-sex and one coed secondary school. Girls at the single-sex school were less critical of their own behavioral conduct than girls in the mixed school. This lack of criticism was the single best predictor of global self-worth in the all-girls' school. In the mixed-sex school, physical appearance was the single best predictor of degree of global self-worth.

On the other hand, Brutsaert and Bracke (1994) found little effect of school type in their study of sixth-grade girls and boys in Belgian elementary schools. While girls and boys seemed unaffected by the gender organization of the school, boys were negatively affected by a preponderance of female teachers on staff, which lowered boys' overall sense of well-being. Smith's (1996) 10-year study of students' attitudes and achievement in one all-boys' and one all-girls' high school in Australia that had made the transition to coeducation found that both girls' and boys' self-concept declined initially but after 5 years increased to a level above that which was measured when the students were in single-sex classrooms.

Attitudes toward Academic Subjects. Several studies found that girls in single-sex schools may have stronger preferences for subjects such as math and physics than their coeducated peers. Mallam (1993) found that students in all-girls' Nigerian schools favored math more than girls in coed Nigerian public boarding schools, particularly when mathematics was taught by female teachers. Finally, Colley et al. (1994) surveyed British students (ages 11-12 and 15-16 years) from single-sex girls' and boys' schools and coeducational schools, asking them to rank their school subject preferences. In the younger age group, girls from single-sex schools showed stronger preferences than their coed peers for stereotypically "masculine" subjects such as mathematics and science, and boys from single-sex schools showed stronger preferences for stereotypically "feminine" subjects such as music and art.

Achievement Variables

Research findings are ambiguous concerning the effects of single-sex schools on girls' achievement. For many studies that did find gaps favoring girls in single-sex schools, once findings were adjusted for socioeconomic or ability variables, these differences diminished. For example, Harker and Nash (1997) used data gathered in a longitudinal study of more than 5,000 eighth-grade students in New Zealand and controlled for individual characteristics (such as socio-economic status) and school type. As with other studies, the researchers confirmed statistically significant differences in favor of girls at single-sex schools. Yet after applying controls for ability levels and for social and ethnic backgrounds, differences disappeared. LePore and Warren (1997), using data from the National Educational Longitudinal Study of 1988, found that boys in single-sex schools did not increase their test scores more than boys in coeducational schools and that girls experienced no statistically significant positive effects of single-sex school enrollment.

Studies that have found positive achievement outcomes attributable to the single-sex environment have all dealt with single-sex schools rather than classes.

A study by Riordan (1990) used longitudinal data to clarify the effects of single-sex education on different populations and curricular areas. Riordan conducted separate analyses for students by sex and race on academic and attitudinal outcomes. He discovered that among African American and Hispanic American students attending Catholic secondary schools, both males and females in single-sex schools scored higher on standardized cognitive tests than their

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peers in mixed-sex schools. To explain the differences, Riordan applied a set of school variables as controls. He argued that policies in single-sex schools that emphasize the academic side of these variables explained virtually all of the test score differences between the two types of schools. Both males and females in single-sex schools also gained on attitudinal variables such as leadership behavior, but much less of this difference was explained by school variables.

Lee and Marks (1990) investigated the "sustained effects" of single-sex schools on attitudes, behaviors, and values. They discovered that women who had attended single-sex schools had higher educational aspirations and were more likely than their coed counterparts to attend selective four-year colleges. However, after controls were applied for attendance at a selective college, effects on young women's aspirations disappeared, leading the researchers to conclude that single-sex education may be an indirect influence that facilitates entry into a select college in the first place. The study found that girls educated in single-sex schools continued to hold less stereotypic views of gender roles into college.

Lee and Lockheed's (1990) study of 1,012 students in ninth-grade Nigerian public schools measured mathematics achievement and stereotypic views of mathematics. Analyzing data drawn from the Second International Association for the Evaluation of Educational Achievement, Lee and Lockheed found no significant gender gap between mathematics scores of Nigerian boys and girls, once other variables were taken into account. But girls in single-sex schools outperformed other girls in mathematics, while boys in single-sex schools did the reverse, after the study adjusted for substantial differences in student background, school resources, and teacher attitudes. As in other studies, girls in single-sex schools had a less stereotypical view of math, while boys in single-sex schools had magnified stereotypes of the subject.

Summary

Studies of attitudinal variables yielded some consistent findings, including differences in specific domains of self-concept between girls in single- and mixed-sex schools (but no overall differences), and findings that support the view that single-sex contexts foster less stereotypical views of subjects. Studies also concur that students perceive single-sex school environments to be more orderly.

Studies finding positive achievement effects attributable to school type tend to view their findings as specific to certain contexts and group characteristics (including socioeconomic status). Some studies recognize that some single-sex schools are "doing something different" that may be reproducible in the coeducational context. These studies view policy and training interventions as particularly valuable.

Other studies have not claimed positive achievement effects for single-sex programs. Although research finds that girls view the single-sex classroom as more conducive to learning, research fails to confirm significant gain in girls' math and science achievement in the single-sex classroom.

Finally, the research, while inconsistent in its assessments of whether single-sex education is "better" than coeducation for girls, does reveal areas of consensus on specific indicators, which may serve as starting points for further research into how single-sex schools affect educational outcomes.

This Digest was adapted from: Haag, Pamela. (1998). Single-sex education in grades K-12: What does the research tell us? In American Association of University Women Educational Foundation, *Separated by sex: A critical look at single-sex education for girls*. Washington, DC: Author.

For More Information

Brutsaert, H., & Bracke, P. (1994). Gender context of the elementary school: Sex differences in affecting outcomes. *Educational Studies, 20*(1), 3-11. EJ 492 031.

Cairns, E. (1990). The relationship between adolescent perceived self-competence and attendance at single-sex secondary school. *British Journal of Educational Psychology, 60*, 210.

Colley, A., Comber, C., & Hargreaves, D. J. (1994). School subject preferences of pupils in single-sex and co-educational secondary schools. *Educational Studies, 20*(3), 379-385. EJ 507 527.

Granleese, J., & Joseph, S. (1993). Self-perception profile of adolescent girls at a single-sex and a mixed-sex school. *Journal of Genetic Psychology, 60*, 210.

Harker, R., & Nash, R. (1997, March). *School type and education of girls: Co-ed or girls only?* Paper presented at the annual meeting of the American Educational Research Association, Chicago. ED 410 633.

Leder, G. C., & Forgasz, H. J. (1994, April). *Single-sex mathematics classes in a co-educational setting: A case study*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans. ED 372 946.

Lee, V. E., & Lockheed, M. M. (1990). The effects of single-sex schooling on achievement and attitudes in Nigeria. *Comparative Educational Review, 34*(2), 209-231. EJ 412 239.

Lee, V. E., & Marks, H. M. (1990). Sustained effects of the single-sex secondary school experience on attitudes, behaviors, and sex differences. *Journal of Educational Psychology, 82*(3), 588.

LePore, P. C., & Warren, J. R. (1997). A comparison of single-sex and coeducational Catholic secondary schooling: Evidence from the National Educational Longitudinal Study of 1988. *American Educational Research Journal, 34*(3), 485-511. EJ 551 431.

Mallam, W. A. (1993). Impact of school-type and sex of the teacher on female students' attitudes toward mathematics in Nigerian secondary schools. *Educational Studies in Mathematics, 24*(2), 223-229. EJ 476 667.

Riordan, C. (1990). Single gender schools: Outcomes for African and Hispanic Americans. In *Research in the sociology of education and socialization* (Vol. 18, pp. 177-205). Greenwich, CT: JAI Press.

Smith, I. D. (1996, August). *The impact of coeducational schooling on student self-concept and achievement*. Paper presented at the biennial meeting of the International Society for the Study of Behavioral Development, Quebec. ED 400 090.

References identified with an ED (ERIC document), EJ (ERIC journal), or PS number are cited in the ERIC database. Most documents are available in ERIC microfiche collections at more than 1,000 locations worldwide and can be ordered through EDRS: 800-443-ERIC. Journal articles are available from the original journal, interlibrary loan services, or article reproduction clearinghouses such as UnCover (800-787-7979) or ISI (800-523-1850).

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